

LOW TEMPERATURE COAL CARBONIZING PROCESS

FIELD OF THE INVENTION:

This invention relates generally to the field of carbonizing coal.

BACKGROUND OF THE INVENTION:

The prior art contains various methods of manufacture including UK patent 445,342 to Morrell. The prior art has not taken advantage of application to heat capture technology and was operated in a batch mode rather than the more efficient continuous feed approach developed here.

OBJECTS OF THE INVENTION:

A first object of the invention is to introduce a continuous feed system for char manufacture.

A second object is to use heat developed to optimize production.

A third object is the creation of a clean carbon rich solid fuel for boilers and home heating.

A fourth object is a higher btu per pound fuel.

A fifth object is oil recovery and removal of tars liquors and chemicals from coal.

BRIEF DESCRIPTION OF THE DRAWINGS:

Fig. 1 is a system drawing.

DESCRIPTION OF PREFERRED EMBODIMENTS:

A feed bin as shown in 1 is conical in shape and sized appropriately to the retort 2 which it feeds via feeding control system 3. The driving force for feeding is gravity.

The amount of coal fed **4** to the retort is controlled by valves or hatches **5** controlled by sensing means **6** which can be infrared or other appropriate means. Data is gathered at the top entrance **6** of the retort **2** and the bottom/exit **7** in order to maintain a volume in the retort to optimize heat processing.

The coal **4** entering the retort **2** at the entrance **6** is subjected to temperatures ranging from 250°C to 400°C. As the coal falls deeper into the retort **2** the temperature increases from 450°C to 600°C. At the lowest level of the retort the temperature range from 600°C to 960°C is generated by hot gasses **8** in a distribution annulus **9** situated on an outer circumference of the retort **2**.

The hot gas is superheated and introduced into the retort. The flow through the heated portion takes approximately four hours. Below the annulus **9**, the coal is allowed to cool. The cooling gases **11** are introduced into the cooling section at the lowest level ranging from 200°C to 300°C. Cooled gas is continuously recirculated to a heating means to be superheated and introduced to the annulus **8**. The output after cooling is dropped to a storage chamber and is now reactive char **12**. This char **12** is the clean fuel coal.

The retort **2** has a gas outlet which is plumbed to a scrubber means **13**. The scrubber **13** uses cool water **14** to clean and cool the gases. The water is then cooled and volatile gases are fed to the heating means as a fuel to superheat the annulus gases. The condensation from the scrubber and water cooling is collected as an oil/tar liquor which can be treated as a beneficial oil byproduct. Throughout the process oxygen is controlled to avoid coal ignition.

Obviously, numerous (additional) modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.